King County
Department of Natural Resources and Parks
Wastewater Treatment Division

February 2003

Hidden Lake Pump Station and Sewer Improvement Project

King County to replace aging wastewater facilities in Shoreline

The King County Wastewater Treatment Division protects public health and the environment by conveying and treating our region's wastewater. Many of King County's sewers and wastewater pump stations are more than 30 years old and need to be upgraded to ensure reliable operation. Some facilities also must be expanded to serve our region's growing population.

King County's Hidden Lake Pump Station serves part of the City of Shoreline and collects sewage from the Ronald Wastewater District and Highlands Sewer District. The pump station sends sewage north through the Boeing Creek Trunk Sewer to the Richmond Beach Pump Station and on to the City of Edmonds' wastewater treatment plant. King County has an agreement with Edmonds in which the city treats some county flows in exchange for the county treating some city flows.

Replace Pump Station and Sewer

King County has determined it must replace the Hidden Lake Pump Station and part of the Boeing Creek Trunk Sewer, and construct a new storage facility. The pump station, located on the corner of 10th Avenue Northwest and Northwest Innis Arden Way in Shoreline, is nearly 40 years old. The existing station has operating problems and is under capacity. The station does not meet current King County pump station design standards, including odor and noise control standards. These problems cause approximately three overflows per year into Puget Sound.

Sections of the Boeing Creek Trunk Sewer are also in poor condition and under capacity. Some corroded sections of the sewer have been relined. While relining restored the sewer's condition, it also reduced its capacity. The corrosion has continued to occur. Concrete in some sections of pipe has corroded down to the steel reinforcing. The corrosion is caused by hydrogen sulfide that is produced by bacterial activity in the sewage and is also a source of odors. During a recent storm, sewage backed up through a manhole onto the street and flowed into a garage. Two other houses had sewage back up in basements. King County has also received odor complaints from several locations along the sewer line.

Remove Infiltration and Inflow

In addition, King County has determined that groundwater and stormwater are flowing into the sewer system through cracks in pipes, improperly connected downspouts, and other sources. This clean water is called infiltration and inflow (I/I). I/I contributes to overflows into Puget Sound by taking up capacity in the sewer system. Handling I/I is expensive because we have to convey and treat this clean water like sewage.

Ronald Wastewater District and King County identified an area just south of Shoreline Community College as having a relatively high amount of I/I (see map on page 3). This basin was selected as one of 10 projects within the County service area to participate in the I/I removal pilot program.

In 2001 and 2002, Ronald Wastewater District conducted sewer system evaluations and concluded that I/I is coming from the side sewers connecting private residences to the main sewer lines. Potential sources of I/I in side sewers include cracks, failed joints or fittings, root intrusion or inappropriate connections from roof, yard or foundation drainage systems. The pilot project will determine the cost-effectiveness of replacing side sewers to control I/I.

The new Hidden Lake facilities will be more reliable and have higher capacity to better serve the community.

Hidden Lake Project Goals and Description

Project Goals

King County's goals include the following:

- *Address critical capacity needs*
- *Reduce sewage backups into homes*
- *Reduce overflows into Puget Sound*
- *Minimize impacts on the community and the environment*
- *Look for opportunities to partner with other agencies to reduce impacts and costs*
- *Provide opportunities for public input*

Phase I - Address Critical Capacity Needs

The Hidden Lake project will be conducted in two phases. Phase I would increase the system's capacity so that it can handle the five-year storm. A five-year storm has a statistical chance of happening an average of once in five years. Phase I improvements are shown on the map to the right. Phase I design work would be completed in 2003, and construction work would occur from 2004 to 2006. During Phase I, King County and the Ronald Wastewater District will identify cost-effective ways to remove clean water from the sewer. The amount of clean water removed will determine future facility needs.

Phase I construction work would occur from 2004 to 2006.

Phase II - Evaluate Future Needs

During Phase II, no additional work will be required on the facilities constructed in Phase I. By 2010, additional capacity will be required downstream (north) of the Boeing Creek Trunk Sewer to handle the 20-year storm. A 20-year storm is a large storm that has a statistical chance of happening an average of once in 20 years.

During Phase II, removing clean water from the system or constructing new facilities will provide additional capacity. The results of the I/I pilot project will be used to determine if removal of I/I in the remainder of the basin could save enough capacity to avoid the need for or reduce the size of new facilities.

If additional capacity is needed, future facilities would include new equipment in the Richmond Beach Pump Station and replacement of approximately 1,000 feet of pipe downstream (north) of that pump station.

Your comments and ideas are needed!

King County is committed to being a good neighbor. We will provide opportunities for public comment on landscape design and facility design, such as site layout, aesthetics, and appearance of aboveground facilities. We will also work directly with the public throughout the process to ensure that suggestions and concerns are addressed.

For more information, contact Jennifer Kauffman at 206-263-6029 or by e-mail at *jennifer.kauffman@metrokc.gov.* Ask to be added to the project mailing list for updates and meeting notices. We are planning a community meeting in 2003 to provide more information on the project. We look forward to seeing you then!

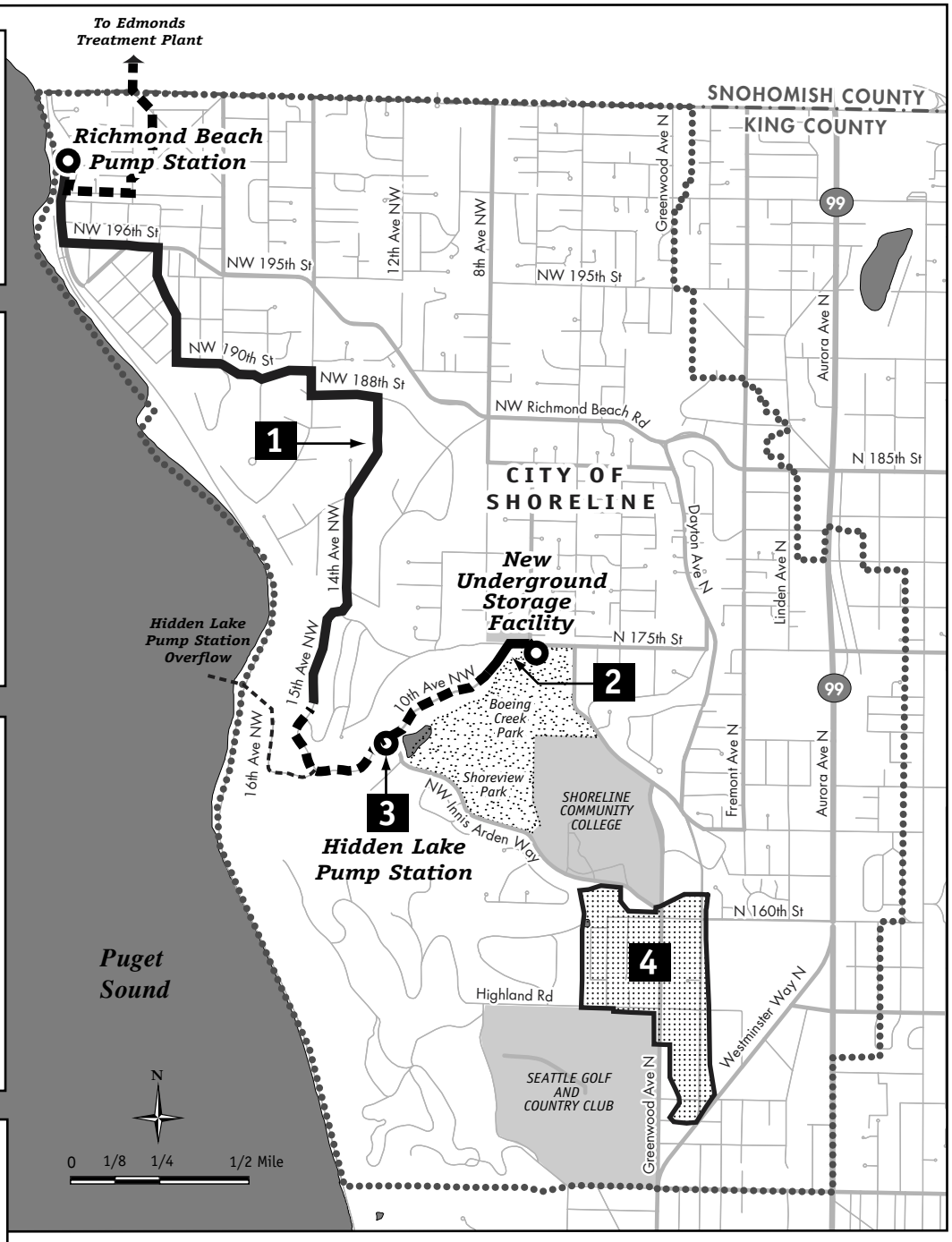
Hidden Lake Pump Station and Sewer Improvement Project Phase 1 (by 2006)

1 Replace Part of the Boeing Creek Trunk Sewer
- Use current route
- Replace approximately 12,000 feet of sewer, including corroded pipe
- Improve odor control in problem areas

2 Construct a New Underground Storage Pipe
- Build a 500,000-gallon underground storage pipe
- Replace about 1,000 feet of pipe
- Temporarily store wastewater during peak storms
- Help limit overflows to Puget Sound
- Coordinate with City's project in Boeing Creek Park

3 Replace Hidden Lake Pump Station
- Use the existing site
- Increase the pumping capacity from 4.3 million gallons per day (mgd) to 6.8 mgd
- Design building and landscape to fit the community
- Select equipment to optimize system operation and reduce odors and noise

4 Construct an Infiltration & Inflow (I/I) Pilot Project
- Partner with Ronald Wastewater District
- Remove clean water from sewers to free up capacity for future needs
- Identify cost-effective control methods
- Fix pipes on private property and in local system
- Identify the amount of clean water removed
- Use results to determine needs for future (Phase II) capacity



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1 *Project Component and Number*

Road

Richmond Beach Wastewater Service Area

Overflow to Puget Sound

Existing Sewer Line

Boeing Creek Trunk Sewer Line Replacement Area

Water body

I/I Pilot Basin

King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

Public information and involvement opportunities

Learn more about the Hidden Lake Sewer Improvement Project!

The King County Wastewater Treatment Division is committed to being a good neighbor by providing public information and involvement opportunities.

For more information on the Hidden Lake project:

- Call the Jennifer Kauffman at 206-263-6029 for more information and answers to your questions and concerns.
- Request updates through e-mail by sending a message to *jennifer.kauffman@metrokc.gov*.
- Ask to be added to the Hidden Lake mailing list for project updates and meeting invitations.
- Visit our web site for additional wastewater information: http://dnr.metrokc.gov/wtd

We are planning a community meeting in 2003 to provide more information on the project and proposed solution. In addition, your comments on the preliminary design of the pump station—including the site layout, aesthetics, appearance, and landscape design elements—are invited. We will also have more information on the proposed location of the underground storage pipe. We look forward to seeing you then!

Find out more about removing clean water from sewers!

- Learn about Ronald's I/I removal pilot project and King County's Regional I/I Control Program on the County's web site http://dnr.metrokc.gov/wtd/i-i/pilots/RonaldPilot.
- For questions about the Ronald Wastewater District, its pilot project, and the public meetings, contact Mike Derrick at Ronald Wastewater District, 206-546-2494 or mderrick@ronaldwastewater.org.

It's easy to get more information about this and other wastewater projects. Just call, e-mail or check out our websites!

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